

[0009] Detailed Description

A narrowband PABX or EPABX (50) is used to provide voice and narrowband data services to end users. Figures 1 through 3, discussed below, and the various embodiments used to describe the principles of the present invention in this patent document are by way of illustration only and should not be construed in any way to limit the scope of the invention. Those skilled in the art will understand that the principles of the present invention may be implemented in any suitably arranged facility.

The present invention extends the capability of existing narrowband PABX or EPABX (50) to provide broadband services such as transmission and routing of high speed broadband data, images and video.

Figure 1 illustrates an exemplary PABX or EPABX (50) architecture modified by adding a broadband extension box or node (40) that houses various broadband interfaces such as XDSL (80), IP Interface (90), Digital Interface (100) or Optical Interface (110). These interfaces are used to connect broadband end user equipment such as Digital Access Device (10), IP Phone (20) or Integrated PC or DTC (30). The broadband extension box or node (40) is connected to the PABX or EPABX (50) via optical interface (60). The end user digital access devices are connected to the extension box or node via various types of twisted wire (70).

The exemplary broadband extension box (40) provides interface functions needed to process signaling and broadband, high-speed data handling functions. The signaling functions consist of handling requests for service origination and termination but not necessarily limited to these functions. The data handling functions consists of detecting various types of broadband data (IP, ATM, Video etc.) packets, verifying that these packets are not corrupted or invalid and storing /forwarding these packets to the PABX or EPABX(50) on a specific optical interface (60) depending on the type of service requested. The existing PABX/EPABX (50) will have been ~~modified~~ upgraded to handle these data packets and route them to the desired destination point requested by the originator. Detailed description of the functionality of the broadband extension box (40) or the ~~modified~~ upgraded PABX/EPABX (50) is not germane to the present invention. What is germane-is to the present invention are the two embodiments of the architecture described below.

~~The present invention shows two embodiments of the architecture extension to the PABX or EPABX (50) that provides broadband services discussed earlier.~~

The first embodiment of the present invention is implemented via a separate/remote broadband extension box or node (40) that interfaces to PABX or EPABX (50) via optical interfaces (60). In this embodiment, the broadband interfaces (80), (90), (100) or (110) described earlier are housed in the extension box or node (40). The end user digital access devices (10), (20) or (30) are connected to the broadband extension box or node (40) on the user end of the interface. These end user devices transmit high speed broadband data, images or video packets to other such devices within the

telecommunications network via the exemplary broadband extension box (40) and PABX/EPABX (50). This embodiment of the architecture is illustrated via figures 1 and 2.

The second embodiment of the present invention is implemented by integrating the functionality of the remote extension box/node (40) within the PABX/EPABX (50) as illustrated in Figure 3. As such the broadband functions provided by the extension box (40) are integrated within the PABX/EPABX (50). In this embodiment, the broadband end user digital access devices (10), (20) and (30) are directly connected to the PABX/EPABX (50), ~~as shown in Figure 3.~~ This embodiment is illustrated via figure 3.

The PABX/EPABX (50) ~~are~~ is connected to other similar PABX/EPABX's or central office switches within the telecommunications network that are capable of providing broadband services described in these embodiments.